oxidizing the sized slag particles in an oxidizing atmosphere at a temperature from about 700°C to below about 900°C for at least 30 minutes causing an anatase phase to stabilize in the slag, causing the iron present in the slag to concentrate at the exposed surfaces of the slag particles, causing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and causing the titanium in the Ti(III) state to be converted to the Ti(IV) state; and

reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C for at least 5 minutes to convert a major portion of the iron in the Fe(III) state to the Fe(II) state.--

--2. (Amended) The method of claim 1 wherein the oxidation is carried out at a temperature from about 750°C to below about 900°C.--

--4. (Twice Amended) The method of any one of the claims 1 to 3 wherein more than 90% of the iron in the Fe(II) state is converted to the Fe(III) state during oxidizing of the slag.--

--6. (Twice Amended) A method of beneficiating titania slag to increase the TiO_2 content thereof to at least 90% by weight comprising the steps of:

sizing the titania slag to a particle size from 75 to 850 μm;

oxidizing the sized slag particles in an oxidizing atmosphere at a temperature from about 700°C to below about 900°C for at least 30 minutes causing an anatase phase to stabilize in the slag, causing the iron present in the slag to concentrate at the exposed surfaces of the slag particles, causing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and causing the titanium in the Ti(III) state to be converted to the TI(IV) state;

reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C for at least 5 minutes to convert a major portion of the iron in the Fe(III) state to the Fe(II) state; and

leaching the reduced slag with acid to obtain a beneficiated slag product with an increased TiO_2 content and leach liquor containing the leached impurities.--

--12. (Amended) The method of claim 6 which includes a step of calcining the beneficiated slag product.--

--13. (Amended) The method of claim 12 wherein the beneficiated slag product is washed and dried to remove volatile by products prior to the calcining step.--

B7 SUBD1

--15. (Twice Amended) The method of any one of claims 6 to 13 wherein the oxidation is carried out at a temperature from about 750°C to below about 900°C.--

Please add new claim 20:

B8 SUBC3

--20. (New) The method of claim 1 or 6 wherein essentially none of the titanium in the Ti(IV) state is converted to the Ti(III) state during reduction.--

In the abstract:

Please replace the abstract with the following version.

B9

--This invention relates to a method of treating titania slag to increase the leachability of impurities from the slag consisting of the steps of sizing the titania slag to a particle size from 75 to 850 μm; oxidizing the sized slag particles at a temperature from about 700°C to below about 900°C causing the iron present in the slag to concentrate at the exposed surfaces of the slag particles and/or causing an anatase phase to stabilize in the slag, causing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and causing the titanium in the Ti(III) state to be converted to the Ti(IV) state; and reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C to convert a major portion of the iron in the Fe(III) state to the Fe(II) state. The invention also relates to a method of beneficiating titania slag to increase the TiO_2 content thereof wherein the above treated slag is leached with acid.--